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Journal of the

Wellington Field Naturalists' Club

Guelph, Ontario.

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Young of Peregrine Falcons.
(*Falco peregrinus*)

THE ONTARIO NATURAL SCIENCE BULLETIN,

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No. 3. 1907.

FOREWORD.

Each year the ranks of those interested in Natural History in Ontario is increasing. Throughout all parts of the Province the utility of a practical knowledge of Natural Science is becoming more evident to the farmer and is occupying a more and more important place in the curriculum of our schools. Aside from this, the interest of the country boys or girls in their surroundings are increased tenfold by a hobby such as Botany or Ornithology which leads them to observe and study the wealth of living things around them, and the love for the quiet country life is strengthened. The influence of such studies as these in preventing the rush into cities and towns of our country young people cannot be overestimated.

We should like to see clubs or societies for the study of Natural History organized in every county in the Province with the headquarters at some central town or city. This would result in the centering and consolidating of the work, in keeping up the enthusiasm of the members and in the accumulation of a mass of valuable and accurate data. Any information which we can give on the subject of the formation and carrying on of clubs will be gladly given at any time.

We should like, this year, to obtain more lists of plants from the different counties, especially of the lesser known orders, as this information is very useful in determining the geographical range of a plant throughout the Province. We should like lists of Ericaceae, Violaceae, Mosses, and Fleshy Fungi. The same applies also in the case of Birds and Mammals. All lists should be accompanied by careful and accurate notes and the specimens listed should be in the writer's possession to verify the report, if considered necessary. This is imperative on account of the fact that unless great care is always taken, errors may creep in which may do a great deal of harm. However, careful and interested work by Natural History Societies in various parts of the Province would, we are sure, soon result in the compiling of a large amount of valuable and accurate information. *Do your share.*

Botanical Excursions.

BY THEO. HOLM, BROOKLAND, D. C.

Having been invited to contribute a paper to the Bulletin, I thought that perhaps a few extracts of my botanical diaries might be of some interest to the reader. For this purpose I have selected some chapters dealing with the distribution of Arctic and Alpine plants, which were written on two Danish expeditions to the Arctic shores, and during my explorations of the Alpine region of the Rocky Mountains in Colorado.

Geographical Botany has always occupied a very prominent place in studies of plant life, and in the present case I wish to show what might be learned by comparing the Arctic flora with the Alpine in regions of very remote situations. The notes, which are offered here are, of course, merely fragmentary, since it would require too much space to draw up a complete list of all the plants that were observed on these expeditions, but on the other hand some results of these excursions may suffice for illustrating the general aspect of these floras. Let us begin with the Arctic:

NOVAJA ZEMLJA.

The rocks along the west coast are very barren, especially towards the North, where they are mostly covered with snow all the year round. In such localities the vegetation is naturally very scant, consisting mostly of Lichens and Mosses, with a few flowering plants, as for instance: *Papaver radicatum,* Rottb., *Dryas octopetala,* L., *Arenaria ciliata,* L., and *Pachypleurum alpinum,* Ledeb. But, if we examine the slopes towards the South, where the snow melts at the beginning of the short season, then we come across a number of plants of the higher families, with showy flowers and fresh, green herbage. Several *Gramineae*: *Hierochloa alpina,* R. et S., and *Poa flexuosa,* Wahl., form dense patches, and among the rocks thrive the beautiful *Hedysarum obscurum,* L., *Astragalus, alpinus,* L., *Phaca frigida,* L., many *Saxifragae,* especially *S. decipiens,* Ehrb., *nivalis,* L., *cernua,* L., and *Hirculus,* L. The *Ranunculaceae are,* also, quite frequent, e.g., *R. acer,* L., *nivalis,* L., *sulphureus,* Soland. and *Thalictrum alpinum,* L., The large-flowered and bright yellow *Potentilla emarginata,* Pursh., and *maculata,* Poir., are common, together with *Draba alpina,* L., *D. Wahlenbergii,* Hartm., *Stellaria longipes,* Goldie., *Taraxacum officinale,* Web., *Artemisia vulgaris,* L., *A. borealis,* Pall., *Oxyria digyna,* Camp., *Polygonum viviparum,* L., and *Wahlbergella apetala,* (L.) Fr.

NORTH-WEST COAST OF GREENLAND.

The rocky shore near Upernivik is, from a botanical point of view, very interesting. Among the flowering plants that are the most abundant and characteristic are especially the *Ericaceae,* among which *Cassiope hyponoides,* (L.) *Don., C. tetragona,* (L.) *Don., Phyllodoce coerulea,* (L.), Gr. et G., *Rhododendron Lapponicum,* Wahl., *Azalea procumbens,* L., *Vaccinium uliginosum* L., *var. microphyllum,* Lge., and *Ledum palustre,* L., *f. decumbens.* These are the most abundant, while the other families are rather scantily represented. *Festuca ovina,* L., *Hierochloa alpina,* R. et S., and *Poa flexuosa,* Wahl., occur here and there, forming small patches with *Luzula confusa,* Lindeb., and *Carex rigida.* Among the *Saxifragae* may be mentioned *S. tricuspidata* as the most common, while *S. stellaris,* L., *var. comosa, S. cernua,* L., *S. rivularis,* L., and *S. decipiens,* Ehrh., are less distributed. *Draba nivalis,* Liljebl., and *D. Wahlenbergii.,* Hrtm., inhabit the drier rocks associated with *Papaver radicatum,* Rottb., *Silene acaulis,* L., *Wahlbergella affinis,* Fr., *Cerastium alpinum,* L., *Dryas integrifolia,* etc. Besides these may be mentioned *Oxyria digyna*, Campd., *Polygonum viviparum*, L., *Potentilla emarginata*, Pursh., *Empetrum nigrum*, L., *Diapensia Lapponica*, L., *Salix herbacea*, L., and *S. glauca*, L.

JAMES' PEAK, COLORADO.

In the Alpine regions, at an elevation of 12,000 to 13,000 feet, I met with a luxuriant vegetation, composed of many species and growing together so as to form large patches, especially near the water-courses. Some of these plants I had met before in the Arctic, while others were new to me, and these were American types. Among the former may be mentioned: *Carex rupestris*, All., *Trisetum subspicatum*, Beauv., *Aira caespitosa*, L., *Festuca ovina*, L., *Luzula spicata*, D.C., *Lloydia serotina*, (L.), Reich., *Oxyria digyna*, Campd., *Polygonum viviparum*, L., *Artemisia borealis*, Pall., *Dryas octopetala, L.*, *Saxifraga flagellaris*, Willd., *S. cernua*, L., *S. nivalis*, L., *Silene acaulis*, L., and a few others. The American element was amply represented by a number of species, but none of these appeared to be more widely dispersed or growing in larger mats than, for instance, the above mentioned *Dryas*, *Silene* and *Aira caespitosa*. Among the American types may be enumerated as the most frequent: *Trifolium Parryi*, Gr., *T. dasyphyllum*, T. et G., *Sieversia turbinata*, Greene., *Heuchera bracteata*, Ser., *Stenotus pygmaeus*, T. et G., *Erigeron simplex*, Greene., *Actinella grandiflora*, T. et G., *Castilleja breviflora*, Gr., *C. septentrionalis*, Lindl., *Polygonum bistortoides*, Pursh., *Carex chalciolepis*, Holm., and *Poa rupicola*, Vasey.

On these three excursions were, thus, collected two very distinct types of plants: Scandinavian and American; of these the former are widely dispersed throughout the Arctic regions of both hemispheres; while the latter are mostly Alpine and confined to this Continent. Some of the Scandinavian species occur, also, in Colorado, besides on the higher mountains of South Europe and Asia. The different aspect which is shown, sometimes, in the Arctic flora, is well illustrated by the predominance of *Ericaceae* on the west coast of Greenland, and their almost total absence from Novaja Zemlja. Furthermore, by the presence of *Hedysarum*, *Phaca*, *Astragalus* and *Oxytropis* on

Novaja Zemlja, while none of them have been observed in Greenland.

If we had extended our comparison to some of the other peaks in Colorado, it would have been seen that some of the American types have found their way North to Greenland. Among these may be mentioned: *Carex nardina,* Fr., *C. scirpoidea,* Wormskj., *Draba aurea,* Vahl., *Arabis Holboellii Hornem., Pedicularis Groenlandica,* Retz., etc. In other words the American flora, and especially that of the Rocky Mountains, is to some extent represented in Greenland.

Let us now examine the geographical distribution of the old world element, which was observed on James' Peak. Eleven of these are circumpolar, viz. : *Trisetum, Festuca, Luzula, Oxyria, Polygonum, Artemisia borealis, Dryas, Saxifraga flagellaris, cernua, nivalis* and *Silene acaulis,* while the remaining three : *Carex rupestris, Aira caespitosa* and *Lloydia* are more scattered farther north. With the exception of *Artemisia, Saxifraga flagellaris* and *S. nivalis,* all the others occur, furthermore, on the Alps of South Europe; eleven of these plants have been recorded from Himalaya, those that are absent being *Silene, Saxifraga nivalis* and *Artemisia.*

This enormous distribution of these Arctic-Alpine species can only be explained by the supposed migration during and after the glacial epoch. The Arctic species were forced south during this period and many stranded on the higher peaks, where they are still in existence. The American Alpine element took part in the migration towards north, accompanying the Arctic plants, when the ice receded, and in this way may be explained the occurrence of American types in Greenland, Iceland and Scandinavia, but the number of these species is, however, very limited. In comparing the American and the Scandinavian Alpine types, characteristic of the American element are the *Scrophulariaceae,* the *Compositae* and the *Papilionaceae;* the others are represented by homologues in the Arctic or northern regions. However, the very few species of both types, which I have enumerated from these stations, are far from sufficient to illustrate the wealth of the American element, and hardly sufficient to demonstrate the distribution of the Arctic plants in Colorado. But I believe the reader will get some idea of the general aspect of these floras, at least so as to realize the existence of plants that are both Arctic and Alpine.

Crataegi of Ontario.

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BY C. S. SARGENT.
Arnold Aboretum, Harvard University.

I have just finished the study of various collections of Crataegus made in Ontario during the past six years and a brief statement of the results of this investigation may be interesting to some of your readers.

In Ontario Crataegus has been carefully and systematically studied and collected only in the neighborhood of Toronto by the late Mr. D. W. Beadle of that city, and by Mr. John Dunbar, of Rochester, New York, at Chippewa and Niagara-on-the Lake, on the Niagara River by Mr. John Dunbar, in the neighborhood of London by Mr. D. W. Beadle, and by Mr. J. A. Balkwell of that city, and in the extreme western part of the Province along the St. Clair River above and below the city of Sarnia by Mr. C. K. Dodge.

I have received in addition to these collections a few specimens collected near Ottawa, a small collection made by Mr. Milton Jack, at Nipissing, a few plants gathered by Mr. J. White, at Snelgrove, by Mr. W. H. Muldrew, at Gravenhurst, by Mr. J. A. Morton, at Wingham, and a collection made by Professor Macoun at several places in the southern part of the Province. These miscellaneous collections are more or less fragmentary and only a few of the species can be satisfactorily determined. Crataegus, therefore, has only been carefully studied in Ontario, at Chippewa, Niagara-on-the-Lake, at Toronto and in its immediate neighborhood, at London and along the St. Clair River. An examination of this material shows, however, that no less than ninety-three species grow in these four regions; of these forty-nine are previously undescribed, forty-four being known only in Ontario. Southern Ontario must certainly be considered, therefore, one of the richest Crataegus regions in the world, receiving as it does several western species from Michigan and eastern species from New York and the lower St. Lawrence valley, in addition to the large number of its endemic species. In no other part of North America is Crataegus a more conspicuous feature of vegetation. Individuals of many species grow to the size of considerable trees, and the number of individuals of some of these is very great. A journey, therefore through Southern Ontario in the spring is enlivened by the flowers and in the autumn by the brilliant fruits of these plants.

All the northern groups into which the species of the genus have been arranged, with the exception of the *Dilatatae,* are represented in Ontario. The large and very widely distributed *Crus-galli* group has as yet but two Ontario representatives and neither of these widely distributed species is common here. The *Punctatae* is well represented by six species, of which one, *C. punctata,* Jacq., is one of the most widely distributed; Thorns, and two others are common in southern Michigan. The *Pruinosae,* with thirteen species, is less abundant than in western New York and southern Michigan, although seven of the species have not been found beyond the borders of the Province. The *Tenuifoliae,* the largest of the northern groups, and of all the groups the one in which it is most difficult to find satisfactory characters for the definition of species, is rather poorly represented by thirteen species; of these only two have not been described before.

The*Mollis group,* which is nowhere in Ontario as abundant as in some parts of the United States, especially in the Mississippi Valley, is represented by five species; of these two are common western trees and have been found in Ontario only along the St. Clair River. Two others are well known western New York plants, and the fifth, *C. Champlainensis,* Sarg., first described from Western Vermont and later found in the neighborhood of Montreal and at Albany, New York, is one of the common and largest of the Thorns that grow near Toronto.

The *Flabellatae* Group is well represented by twelve species, of which eight have not been previously described. The plants of this group are very abundant in various parts of the territory, and often growing to a large size are very conspicuous. The *Intricatae,* which is best represented by species in eastern Pennsylvania and which is rare in Western New York, has four Ontario species. One of these is a common plant in western New York; the others are new and of these one species, found at London, occurs also in eastern Michigan.

The Ontario *Coccineae* are interesting as Ontario is a meeting-place of eastern and western species of this group, for the typical *C. coccinea,* L., a north Atlantic seacoast species found also in the valley of the St. Lawrence, *C. Dodgei,,* Ashe, a species which ranges from southern Michigan to eastern Massachusetts, Connecticut and eastern Pennsylvania, and *C. Margaretta,* Ashe, a Missouri species found also in middle Tennessee and in Iowa, all occur in Ontario. The other species in this group are new and have not been found in other parts of the country.

Of the *Anomalae* Group, previously believed to be almost exclusively confined to western New England and eastern New York, there are six species; these include four now first described, of western New England, and *C. Scabrida,* Sarg., *C. asperifolia,* Sarg., of the same region, but recently detected in the Genessee valley of western New York. Of all the natural groups into which the species of Crataegus have been arranged the largest and perhaps the most conspicuous in Ontario is the *Tomentosae,* distinguished by the cavities in the ventral faces of the nutlets. Of this northern group no less than twenty-six species have been found in Ontario, or nearly one-half of the number of species in this group that have been previously described. Of the Ontario species of *Tomentosae* no less than seventeen are now first distinguished.

This preliminary report, based on material found in only a few places will, it is to be hoped, stimulate further investigation of the Crataegus flora of the Province by Canadian botanists. There is still much to be done before it is possible to form a comprehensive idea of this flora. All that southern part of Ontario that extends from Toronto on the west to Montreal is still unexplored. Many species are found at Toronto and many others in the neighborhood of Montreal, and it will be remarkable if the genus is not equally well represented at several points near the southern shore of Lake Ontario east of Toronto and along the northern shores of the upper St. Lawrence. Nothing yet is known of any species that may grow in the extreme southern part of the territory along Lake Erie, or in the west above the outlet of Lake Huron; and it is only known that a few species have been found in a few remote stations in the north.

The collection of Crataegus requires care and patience. The appearance of many of the species is so different in the autumn from what it is in the spring that in order to be sure of securing flowers and fruit of the same individuals it is absolutely necessary to carefully mark and number in the spring every plant from which flowers are gathered, and then to take fruiting specimens from the same plants. The number of the stamens, and especially the color of the anthers, are important characters upon which the distinction of species is largely based. It is desirable when the flowers are gathered to count and note the number of stamens and it is essential to note the color of the anthers as this changes in drying. The anthers of Crataegus are either pink, light rose color, or they are pale yellow. It is also desirable to count in a number of flowers and record the number of styles, and also to measure and note the diameter of the expanded flower and to count and note the average number of flowers in a flower-cluster. In the autumn when the fruit is gathered it is important to note its color, whether the fruit is lustrous, pruinose, etc., and the color, consistency and flavor of the flesh. It is also important to supplement these notes with any information which cannot be derived from an examination of the dried specimens, such as the size and habit of the plant, character of the bark, of the stem and branches, abundance of individual and nature of the soil in which they are found.

Although something has been done towards this, it will be impossible to prepare aything like a systematic account of all the species found in Ontario without the co-operation of many local collectors willing to devote themselves to the genus for two or three weeks in the spring and perhaps for a rather longer time in the autumn as different species ripen their fruit from the end of August to the beginning of November. It must not be forgotten, however, that specimens of Crataegus from regions not previously carefully studied, unless the species is represented by flowering specimens, accompanied by notes on the number of stamens and the color of the anthers, and by specimens made in the autumn after the fruit is ripe, are of no real value. Nothing can be done in determining new species unless the color of the anthers is known, and flowering specimens, unless fruiting specimens, can be obtained from the same individual, are not worth the trouble of making. Specimens taken, as is often the case in summer, with half-grown fruit, are absolutely worthless.

Exotic Trees and Shrubs which Reproduce Themselves Naturally from Seed at Ottawa.

BY W. T. MACOUN, HORTICULTURIST,
Central Experimental Farm, Ottawa.

When one realizes that practically all our weeds are introduced species which reproduce themselves successfully year after year and flourish to the injury of cultivated crops, the question naturally arises: are there many other exotic plants not considered weeds that reproduce themselves naturally? There are quite a large number, but in this article the Trees and Shrubs only will be referred to, and these are limited to those found growing at Ottawa. The writer has had a good opportunity of observing these, both in the Forest Belts at the Central Experimental Farm, on the Ornamental Grounds, and in the woods about Ottawa. In addition to the name of the plant, the conditions thought to favour its reproduction are also given. Of the nineteen species which we have in mind, nine have fleshy or pulpy seed coverings. These make good food for birds. The seed is swallowed by the birds and being dropped in woods and thickets the moisture there favours germination. These species are the Common Barberry (*Berberis vulgaris*): Bush Honeysuckle (*Lonicera tatarica*): European Mountain Ash (*Pyrus aucuparia*): Alder Buckthorn (*Rhamnus frangula*): Cathartic Buckthorn (*Rhamnus catharticus*): Wayfaring Tree (*Viburnum lantana*): Sharp-leaved Cotoneaster (*Cotoneaster acutifolia*): Mezereum (*Daphne mezereum*): and the Pur-Purple Leaved Rose (*Rosa ferruginea*). Of these, the Bush Honeysuckle is probably the most frequently met with, the Mezereum but rarely.

Two others have fleshy or pulpy seed coverings which prevent the seeds drying up until conditions favour germination. These are the European plum (*Prunus domestica*): and the Apple (*Pyrus malus*). Six bear seed which falls to the ground in late fall or winter and germinates early in the spring. These are the Norway Maple (*Acer platanoides*): the Ginnalian Maple (*Acer tartaricum ginnala*): the cut-leaved White Birch (*Betula alba laciniala pendula*), and the Scotch pine (*Pinus sylvestris*): the Japan Catalpa (*Catalpa kaempferi*) and the Japan Spiraea (*Spiraea callosa.*) Two produce seed in early summer which falls to the ground and germinates in a few days, as there is usually considerable wet weather in early summer. These are the Siberian Pea Tree (*Caragana arborescens,* and *Caragana frutescens*).

There are doubtless other trees and shrubs which reproduce themselves naturally from seed at Ottawa, but these are all that the writer can recollect. It is probable that many other hardy species would reproduce themselves naturally if the seed had favorable conditions when it reaches the ground and remained so until germination. This is proved by the many exotic species which are raised in seed beds at the Central Experimental Farm.

The Ferns of Wellington County.

BY T. J. MOORE, GUELPH.

Although our ferns are not equal to those of the Carboniferous Period in size nor to those of the tropics in number, we have an interesting group. They add much to the beauty of our flora.

During August I spent some days in Acton and on one of those I made a special study of ferns. After walking about a mile from the village, I entered a varied woods. Hill and hollow, swamp and creek, rock and humus, cedar, balsam, hemlock, maple and beech all combined to make this a ground suitable for a variety of ferns.

In the swamp was found the Bladder Fern (*Cystopteris bulbifera,* L.) with its long triangular leaves trailing over rocks and the roots of the arbor vitae. Its more delicate sister, the Brittle Fern, (*Cystopteris fragilis,* Bernh.) also found a place here. The Cinnamon Fern (*Osmunda cinnamomea,* L.) looked more robust with its large sterile fronds with some of the rusty wool which had protected it in its infancy still clinging to its stipes, but its fertile fronds had, by this time, in most cases disappeared. Under the cedars stood the delicate, triangular-leaved Oak-fern (*Phegopteris dryopteris*, Fee) and not far from it might be seen the Moonwort (*Botrychium virginianum,* Swartz.) holding aloft its bunch of grape-like sporangia. In a semi-cleared portion the Marsh Shield-fern (*Aspidium thelypteris,* Swartz.) appeared to be struggling to hide the unsightly brush heaps, while in the less exposed places it was assisted by the Crested Shield-fern (*Aspidium cristatum,* Swartz.)

On the banks of the creek was the large Ostrich Fern (*Onoclea struthiopteris,* Hoff.)—extra large here because of the rich food it receives from the occasional overflow of a very filthy stream—and beside it the ordinary looking Sensitive Fern (*Onoclea sensibilis.* L.) raised its fertile frond with its berry-like pinnules as if attempting to imitate the "fiddle-head" of its neighbor.

Across the creek on the side of a small hill among the hemlock and sugar maple grew the Marginal Shield-fern (*Aspidium marginale,* Swartz.) and on the crest of this was the Lady Fern (*Asplenium filix-foemina,* Bernh.)—the especial favourite of the caterpillar. Here, too, with its straight sori and pinnate leaves was the Silvery Spleenwort (*Asplenium thelypteroides,* Michx.) Just above these, clumps of Maidenhair (*Adiantum pedatum,* L.) were intermingled with the Spiny-toothed Shield-fern (*Aspidium spinulosum,* var. *intermedium,* D. C. Eaton) and by the marked contrast of their pinnae added to the beauty of the scene, while on a little higher ground the evergreen Christmas Fern (*Aspidium acrostichoides*, Swartz.) was looking down on its more showy but less hardy neighbors.

About forty rods from this woods are large limestone rocks partly covered by dogwood (*Cornus alternifolia,* L.) and arbor vitae. Here, just above a spring, near the foot of a cliff, clinging to the face of the cool grey rock, was the delicate little Slender Cliff-brake (*Pellaea gracilis,* Hook.) while above and exposed to the sun stood the coarse, hardy Bracken (*Pteris aquilina,* L.) Some few rods east of this are very large crevices shaded by cedar. The edges were fringed with Polypody (*Polypodium vulgare,* L.) with its cinnamon-colored rhizomes lying close to the rock and the fronds stretching over the chasm as if trying to get a glimpse with its large round sori at the delicate Maidenhair Spleenwort (*Asplenium trichomanes,* L.) as it clung to the sides of the rock or to watch the Walking-fern (*Comptosorus rhizorphyllus,* Link.) as it wended its way slowly over the limestone below.

Although I had not travelled far I had found twenty species of ferns and as I was satisfied with my day's outing I turned homeward.

All of the above ferns are found in Wellington County and in addition the Purple-stemmed Cliff-brake (*Pellaea atropurpurea,* L.) is frequently found rooted in crevices of limestone rock; the Royal fern (*Osmunda regalis,* L.) in many of our swamps and marshes; Clayton's Fern (*Osmunda claytoniana,* L.) is reported from near Sorby's bridge on the Speed and Puslinch Lake, and Mr. D. Mitchell has found Goldie's Fern (*Aspidium goldieanum,* Hook.) in two places in West Garafraxa. The Long Beech-fern (*Phegopteris polypodioides,* Fee), the New York Fern (*Aspidium noveboracense,* L.), Bott's Shield-fern (*Aspidium boottii,* Tuckm.), the Green Spleenwort (*Asplenium viride,* Huds.), the Narrow-leaved Spleenwort (*Asplenium angustifolium,* Michx.) and the subspecies *Aspidium cristatum clintonianum,* D. C. Eaton, are rare in the county.

The Cyperacea of Peel County, Ont.

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BY J. WHITE.

Where no station is given it means that they occur in the neighborhood of Snelgrove, or are generally distributed over the county.

Carex albursina, Sheldon—Woods, Snelgrove. Rare.
C. arctata, Boott.—Woods. Frequent.
C. aurea, Nutt.—Springy banks. Frequent.
C. bromoides, Schk.—Open swamps. Common.
C. brunnescens, Poir.—Open swamps. Common.
C. canescens, L.—Open swamps. Common.
C. chordorhiza, L.f.—Bogs. Scarce.
C. comosa, Boott.—Borders of lakes, Snelgrove. Scarce.
C. communis, Bailey.—Dry woods. Abundant.
C. crinita, Lam.—Open swamps. Common.
C. cristata, Schw.—Wet meadows. Frequent.
C. deweyana, Schw.—Dry woods. Frequent.
C. eburnea, Boott.—Among rocks, Credit Forks. Scarce.
C. filiformis, L.—Bogs, Snelgrove. Rare.
C. gracillima, Schw.—Moist woods. Common.
C. granularis, Muhl.—Springy places, Churchville. Rare.
C. hystricina, Muhl.—Low meadows. Abundant.
C. intumescens, Rudge.—Wet swamps. Abundant.
C. lanuginosa, Michx.—Low sandy ground, Humber R. Rare.
C. laxiculmis, Schw.—Dry woods. Frequent.

C. laxiflora varians, Bailey.—Wet woods. Frequent.
C. laxiflora patulifolia, Carey.—Woods, Snelgrove. Rare.
C. leptalea, Wahl.—Swamps. Frequent.
C. limosa, L.—Bogs, Snelgrove. Rare.
C. longirostris, Torr.—Moist woods, Snelgrove. Rare.
C. lupulina, Muhl.—Wet places. Frequent.
C. magellanica, Lam.—Open swamps. Scarce.
C. pauciflora, Lightf.—Bogs. Frequent.
C. pedunculata, Muhl.—Dry woods. Common.
C. pennsylvanica, Lam.—Dry banks. Frequent.
C. plantaginea, Lam.—Dry woods. Frequent.
C. pubescens, Muhl.—Dry woods. Frequent.
C. retrorsa, Schw.—Wet meadows. Common.
C. riparia, Curtis.—Wet meadows. Abundant.
C. rosea, Schk.—Woods. Frequent.
C. rosea radiata, Dewey.—Wet, open woods, Snelgrove. Scarce.
C. scoparia, Schk.—Wet meadows. Common.
C. siccata, Dewey.—Sandy hills, Humber River. Rare.
C. stipata, Muhl.—Wet meadows. Abundant.
C. stricta, Lam.—Borders of swamps. Common.
C. tenella, Schk.—Wet woods. Frequent.
C. teretiuscula, Good.—Bogs, Snelgrove. Rare.
C. torta, Boott.—Wet meadows. Snelgrove. Rare.
C. tribuloides reducta, Bailey.—Swamps. Scarce.
C. trisperma, Dewey—Open swamps. Frequent.
C. tuckermani, Dewey.—Wet woods. Common.
C. umbellata, Schk.—Dry hills, Snelgrove. Rare.
C. varia, Muhl.—Dry woods. Frequent.
C. vulpinoidea, Michx.—Wet meadows. Abundant.
Cyperus diandrus, Torr.—Springy places. Frequent.
C. filiculmis, Vahl.—Sandy hills. Humber River. Scarce.
Dulichium spathaceum, Pers.—Borders of lakes. Abundant.
Eleocharis intermedia, Schules.—Borders of lakes.
E. ovata, R. Br.—Borders of ponds. Common.
Scirpus americanus, Pers.—Shallow water. Frequent.
S. atrovirens, Muhl.—Wet places. Abundant.

S. lacustris, L.—Shallow water. Common.
S. eriphorum cyperinus, Gray.—Wet places. Abundant.
Eriophorum gracile, Koch.—Bogs, Snelgrove. Rare.
E. vaginatum, L.—Bogs. Frequent.
E. virginicum, L.—Bogs. Common.
Rhynchospora alba, Vahl.—Bogs. Frequent.

Ferns of Hastings Co., Ont.

BY C. J. YOUNG.

Ferns found in the Township of Madoc and Elzevir, Co. of Hastings, Ontario, during the summer and fall of 1906.

Adiantum pedatum. Abundant.
Aspidium acrostichoides. Common.
A. spinulosum. Common.
A. var. *intermedium*. Common.
A. marginale. Common.
A. cristatum. Uncommon.
A. goldianum. Rare
A. boottii. Abundant.
A. fragrans. Rare.
A. thelypteris. Abundant.
A. noveboracense. Common.
Asplenium angustifolium. Rare.
A. thelypteroides. Common.
A. trichomanes. Rare.
A. filix-foemina. Abundant.
Camptosorus rhizophyllus. Rare.
Cystopteris bulbifera. Rare.
C. fragilis. Common.
Onoclea sensibilis. Abundant.
O. struthiopteris. Abundant.
Osmunda cinnamomea. Not common.
O. claytoniana. Fairly common.
O. regalis. Common.
Phegopteris dryopteris. Common.

P. hexagonoptera. Rare.
P. polypodioides. Common.
Polypodium vulgare. Common.
Pteris aquilina. Common.
Woodsia ilvensis. Local.
Botrychium ternatum. Uncommon.
B. Virginianum. Abundant.

Note:—In the neighboring County of Frontenac, township of Miller, I have found:

1. *Pellaea gracilis.*

And *Camptosorus rhizophyllus* is quite abundant in certain places.

In Leeds I found:

2. *Asplenium ebeneum,* not uncommon in suitable places in the Township of Lansdowne.

In the compilation of this list, I am much indebted to the Misses Thompson, of Queensborough, for their assistance.

Orchidaceae of Hastings Co.

BY C. J. YOUNG.

The following are the Orchidaceae I have met with during the past two summers in the township of Madoc, County of Hastings, Ont.:

Aplectrum hyemale. Very rare.
Arethusa bulbosa. Rare.
Calopogon pulchellus. Not common.
Calypso borealis. Very rare.
Corallorhiza innata. Rare.
C. striata. Rare.
Cypripedium accaule. Rare.
C. arietinum. Very rare.
C. parviflorum. Rare.
C. pubescens. Common.
C. spectabile. Abundant.

Goodyera repens. Rare.
Habenaria dilatata. Common.
H. hyperborea. Common.
H. orbiculata. Rare.
H. psycodes. Uncommon.
H. vires-cens. Common.
Orchis rotundifolia. Local.
O. spectabilis. Local.
Pogonia ophioglossoides. Local.
Spiranthes cernua. Loacl

Note: Of the above, *A. hyemale* and *C. arietinum* are very rare. The former I found on rocky ground near Bunker Lake; the latter in a tamarac swamp near Eldorado. This plant flowers earlier than the other Cypripedia. I found it on June 2nd fully out.

The Cyperaceae of Middlesex County.

BY JOHN DEARNESS, M. A.

Canadian taxonomists need not yet, Alexander like, shed tears that are no unconquered fields even among the flowering plants whilst our hawthorns and sedges are so incompletely known. The following list, which was requested by last year's editor, although entitled the Cyperaceae of the County of Middlesex, makes no pretence to be complete.

The exhaustive observation of such a genus as Carex cannot be made in a haphazard way. The observer must give himself to such work seriously and systematically. A somewhat desultory field-survey of the genus prepares him to study the characters and relations of the sections as these are laid down by the systematists. He must then proceed to study minutely each species he collects and fix in his memory more than its mere naked-eye appearance. Neglect of this duty will surely result in repeated collections of the same species or oversight of externally similar forms which are really different.

Dr. Macoun has credited the Canadian Flora with over 180 different species of Carex, and about one-third of that number has been reported in Middlesex. So far as I know Drs. Burgess and Millman and the writer are the only persons who have collected sedges in this County. The former gentlemen's excursions were mostly limited to a radius of a few miles around the City of London. My own collections were made only in the eastern half of the County and chiefly during the season of 1889. Since that date I have seldom taken a sedge that did not happen to be the host of a fungus parasite. My doubtful identifications at the time were referred to Dr. Macoun.. Last year Mr. A. B. Klugh revised all my Middlesex collections in the Cyperaceae. The list as far as it goes is therefore probably correct. The letters in parenthesis, (*B. M. D.*) mean respectively Burgess, Millman, Dearness.

Cyperus diandrus, Torr. This beautiful and variable little sedge is common throughout the range in wet sandy situations. (*B. M. D.*)

C. rivularis, Kunth. Collected at Granton. (*D*)

C. esculentus, L. Locally common, quite weedy in some situations. A gardener in London East brought in a sheaf of this sedge bearing on its roots an abundant crop of tubers. He said that it had taken full possession of a low, peaty part of his ground and was the worst weed on his place. (*B. M. D.*)

C. strigosus, L. Locally common; very variable. Very subject to rust; three species found on it here, viz. *Puccinia cyperi,*. Arthur, *P. angustata,* Pk., *P. nigrovelata,* Ell. & Tracy. Quite a weed in some fields between Komoka and Delaware (*D.*)

C. filiculmis, Vahl. Along G. T. R. east and west of London in sandy, thin woods. Conspicuous by its dense heads on their long wiry stems. (*B. M. D.*)

Dulichium spathaceum, Pers. Common in bogs and often affected with rust.

Eleocharis ovata, R. Br. A conspicuous sedge in Redmond's bog, west of London. (*B.D.*)

E. palustris, R. Br. Pond margins. (*B. M. D.*)

E. acicularis, R. Br. Common on the flats of the Thames River. (*B. M. D.*)

Scirpus Americanus, Pers. In marshes near Komoka. (*D*)

S. lacustris, L. In water. (*B. M. D.*)

S. atrovirens, Muhl. Common in low ground. (*B. M. D.*)

S. eriophorum cyperinus, Gray, London. (*B. M. D.*)

S. lineatus, Michx. Flats of the River Thames. (*B. M. D.*)

Eriophorum callitrix, Chamisso. The plant reported as *E. vaginatum,* L. (*B. M. D.*)

E. Virginicum, L. Redmond's swamp; bogs in Dorchester. (*B. D.*)

E. viride-carinatum, Fernald. Formerly reported as *E. polystachyon* L. Cedar swamps near Byron. (*B. D.*)

E. gracile, Koch. In ponds, Dorchester and Westminster. (*M. B. D.*)

Rynchospora alba, Vahl (*B.D.*) Common in bogs near city waterworks.

R. capillacea, Torr. (*B.D.*)

Scleria triglomerata, Michx. In a sandy thicket. Rare. (*B.*)

Carex pauciflora, Lightf. In Redmond's pond. (*B. M. D.*)

C. polytrichoides, Muhl. In a swamp. (*B. M.*)

C. jamesii, Schwein. In dry woods, London Township (*D.*)

C. bromoides, Schk. Bogs and swamps. (*B.*)

C. vulpinoidea, Michx. Common in low ground. (*B.M.D.*)

C. teretiuscula, Good. I had this marked "Not rare in low ground." Mr. Klugh says my specimen is *C. vulpinoidea.* Dr. Burgess reports the species in the county. (*B. M.*)

C. stipata, Muhl. In swamps near London. (*B.*)

C. sparganoides, Muhl. Common in low ground. Cootes, etc. (*B. M. D.*)

C. cephaloidea, Boott. Sandy woodland. (*B.M.*)

C. cephalophora, Muhl. In thickets. (*B. M. D.*)

C. Muhlenbergia, Schk. Meadows. (*B. M.*)

C. rosea, Schk. In Cootes', Granton, etc. In thickets. (*B. D.*)

C. chordorhiza, Ehrh. In marshes. (*B. M.*)

C. tenella, Schk. In Cootes' swamp. In marshes. (*B.D.*)

C. trisperma, Dew. In Cootes' swamp. (*B. M. D.*)

C. tenuiflora, Wahl. Borders of a peat bog. (*B. M.*)

C. canescens, L. Both the type and var *vulgaris* are reported by Burgess and Millman in swamps near London. (*B. M. D.*)

C. Deweyana, Schw. In Cootes' woods and other localities, around London. (*B. M. D.*)

C. stellulata, Good. This may be the species reported under *C. echinata* by Drs. Burgess and Millman. They also reported a variety *microstachys* Boeckeler.

C. interior, Bailey. Cootes' woods. This is Mr. Klugh's determination of species I had labelled *C. sterilis*....(*D.*)

C. tribuloides and varieties. Common. What I had labelled *tribuloides,* Mr. Klugh divides into *C. cristata,* Schw. and *C. Bebbii,* Olney. B. and M. report *C. tribuloides,* Wahl., *var cristata,* Bailey, in wet meadows near London.

C. scoparia, Schk. Low meadows. (*B. M.*)

C. straminea, Schk. In woods. (*B. M. D.*)

C. festucacea, Willd. (*B.*)

C. tenera, Dewey. Woods. (*D.*)

C. gracillima, Schw. Wet meadows. (*B. M. D.*) Peters' swamp. (*D.*)

C. aurea, Nutt. At London, (*B.*) At Seabrook's. (*D.*) Not rare.

C. prasina, Wahl. Low grounds (*B. M.*) Dorchester (*D.*)

C. viridula, Michx. Low grounds. (*B.*)

C. flava, L. Abundant on river flats. (*B. M. D.*)

C. stricta, Lam. Margin of creek. (*D.*) Dr. Burgess has found both the type and var *decora,* Bailey, near London.

C. glauca, Scopoli. On the border of a meadow in poor soil. (*B.*)

C. crinita, Lam. Low grounds (*B.M.*) Rather common. (*D.*)

C. Magellanica, Lam. Bogs. (*B. M.*)

C. limosa, L. Mossy bog. (*B. M.*) At Redmond's pond; heads rendered conspicuous with a black Ustilago (*D.*)

C. granularis, Muhl. Swamp. (*B. M.*) Not rare. (*D.*)

C. laxiflora, Lam. The type as well as the varieties *intermedia,* Boott,, *striatula,* Carey, and *latifolia,* Boott, are reported by Burgess and Millman. One of my varieties was determined by Dr. Macoun to be *var varians,* Bailey, another one is in Mr. Klugh's opinion *var patulifolia* Carey, and a third :

C. albursina, Sheldon. In Ryan's woods. (*D.*)

C. retrocurva, Dew. Border of ravine. (*B. M.*) The *C. laxiculmis* of Schweinitz in part.

C. plantaginea, Lam. Conspicuous by its leek-like leaves in undulating beech and maple woods. (*D.*)

C. eburnea, Boott. River banks. (*B. M. D.*)

C. pedunculata, Muhl. Damp woods. (*B. M.*)

C. Pennsylvanica, Lam. Near London. In Caradoc. (*B. M. D.*)

C. communis, Bailey. Probably what *B. M.* reported under *C. varia.*

C. varia, Muhl. Reported formerly as *C. commonsii.* (*D.*)

C. pubescens, Muhl. Rich low woods. (*B. M.*)

C. scabrata, Schw. Near London. (*B.*) Lobo Township. (*D.*)

C. arctata, Boott. In dry woods west of London. (*Macoun.*)

C. longirostris, Torr. River bank. (*B. M.*)

C. riparia, W. Curtis. Common at London. (*B. M.*)

C. filiformis, L. Swampy ground. (*B. M.*)

C. lanuginosa, Mich. Vicinity of London. (*B.*)

C. intumescens, Rudge. Swamps. (*B. M.*) At Cootes' and common elsewhere. (*D.*)

C. lupulina, Muhl. Common in swamps and ditches. (*D.*)

C. oligosperma, Michx. Bogs. (*B.*) At Redmond's pond. (*D.*)

C. tuckermanii, Boott.. Swamps. Common. (*B. M. D.*)

C. retrorsa, Schw. Marshy places; common. (*B. M. D.*)

C. hystricina, Muhl. Wet meadows and swamps; common. (*B. M. D.*)

C. comosa, Boott. Swamp. (*B. M.*). At Nixon's pond. (*D.*)

Identifications.

BY P. A. TAVERNER, HIGHLAND PARK, MICH.

The past few years has been notable for the great impetus that has been given to "Nature Study." That this movement has been of immense benefit to the country at large cannot be disputed. It has opened the eyes of thousands to the wonders of nature that are continually occurring about us, and thereby, has not only given pleasure, but has led to a more intelligent understanding of the forces of Nature, and the laws under which she works. On the other hand it has done some things that have not been as desirable. It has also let loose upon the records of the scientific world a number of half-formed naturalists, having a smattering of scientific procedure, but inexperienced in the methods of scientific accuracy. Such proceedings might, if not bruited abroad, do but little harm except to the observer; but when they are incorporated in our literature, their possible ill effects are incalculable. I do not wish to decry the good work the "Nature Schools" have done, but merely wish to suggest that in many such institutions a little more stress could be laid on this phase of the question to advantage.

In no place is this looseness of work more evident than in the various records of identification that have appeared from time to time in the various ornithological journals. Being a bird man, I can speak but for that branch of the work, but I have no doubt that all the other "ologies" have suffered in the same way to a greater or less extent. This is a really important matter, and one of the first things that should be drilled into the student's head is the necessity for absolutely correct identifications as well as an understanding of the diffculty of doing the same. One of the most difficult things in ornithology is to correctly name many of our forms. Even an expert with the specimen in his hand is often more than puzzled, and, as a rule, the better naturalist he is the more he will doubt his own judgment when he is dealing with rare and unfamiliar species.

The Audubon movement has done much to awaken interest in the study and preservation of the wild life about us, but it has laid so much stress upon the protection side that many of its followers have carried it to an extreme beyond the limits conceived of by its founders. It is not necessary that the ordinary nature student should amass a large collection of specimens nor be familiar with the rarer forms of life that he may meet with once or twice in a lifetime, but on the contrary, he should realize his or her limitations and not rush into print with a totally impossible record. We have to-day numbers who go afield with opera-glass and note book and feel competent to identify with these species that experts would hesitate to name with the skin in hand and book open before him. The man that actively collects is not as apt to accept his own eye identifications of rare forms as he who works exclusively with the opera glasses. To a certain extent this may be explained by the fact that he is not as habituated to watching for minute points of difference in the field as the other, but there is other and more potent cause of caution. He has made so many such mental identifications and has verified their falsity by actually taking the specimen that he has learned to know the danger there is in flickering sun-light and shadow, dull weather and fitful glimpses. He who never or rarely shoots has had nothing by which to check the correctness of his conclusions and so retains his faith in himself unshaken. It was Thoreau, I think, that asks "Hast thou named all the birds without a gun?" and it was Dr. Coues, who knew birds in the field as well as in the closet, that answered "No, nor any other man," or words to that effect.

The matter has lately been taken up by two of our leading ornithological journals, namely, Condor VIII p. 156 and Auk XXIII p. 469-70. The latter gives the views of two of our leading men and I can do no better than to quote what Dr. Allen says therein in his review of "The Birds of Cambridge Mass by Wm. Brewster:

"In the preface (p. 56) is discussed the important question of what should be taken as satisfactory evidence for the occurrence of birds at localities where they do not properly belong.

The author very justly, we think, does not admit that observation of the living bird is sufficient, and should not 'be considered as establishing anything more than possible or probable occurence, acording to the weight and character of the evidence.' There may be exceptions to the rule, as in the case of species of easy recognition, like the Turkey Vulture, Swallow-tailed Kite, and the Cardinal, when reported by persons known to have had previous familiarity with the birds in life.' 'But on no authority, however good, should a mere field observation of any bird that is really difficult to identify, be taken as establishing an important primal record.' This is the basis of the author's rulings in the present pages—a proper and the only safe basis in view of the present day methods of numerous amateur observers, who are too often burdening ornithological literature with ill-advised records."

Notes on Some Warblers of Eastern Ontario.

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BY REV. C. YOUNG, MADOC, ONT.

It is scarcely for me to write at any length on some of our warblers that are well known everywhere, such as the yellow warbler, 'Dendroica aestiva,' the Maryland Yellow-throat, and a few others, but I desire in this short paper to call attention to a few that are not so often commonly observed.

One of these, the black-throated blue, is a regular migrant east of Toronto. It makes its appearance, usually, the second week in May, and leaves us in September. May, 1905, near Madoc, in Hastings County, I noticed them for the first time on May 4th, and saw several on the return migration as late as October 4th. This year, 1906, I did not observe any in the spring, but saw two on September 24th. This bird breeds sparingly in our larger woods. I came across a nest in the County of Frontenac in June, 1904. It was built in the crotch of a maple sapling, three feet from the ground. The old bird was very tame and easily identified. It may be classed as a common migrant, but rare breeder.

The chestnut-sided warbler is a common species, and breeds in second-growth woods and clearances. In 1905 I noticed several of their nests, all built in hazel bushes, and more or less suspended between the sprays. The nest is flimsy constructed of stalks of grass and leaf stems, and by no means as neatly finished as the preceding. I did not observe this bird at the time of spring migration, but saw one in the fall as late as September 30th, 1905. In 1906 I saw them for the first time on May the 14th. It seems that warblers of several species migrate together, as on May 4th, 1905, besides the black-throated-blue, I observed perula and myrtle, and on May 14th, 1906, I saw blackburnian, black-throated-green, chestnut-sided and myrtle. The perula does not breed in these counties, at least I never heard of a nest; the black-throated-green does occasionally, but more especially in the County of Frontenac, North of Kingston. In the vicinity of Sharbot Lake, 50 miles North, I have noticed a pair that evidently had their nest nearby, and have myself seen no less than three nests of the myrtle warbler there. Not many breed in our Cedar trees, occasionally a robin, or even a song sparrow, but of the four nests of the myrtle warbler I have seen, three were in cedar trees near water; the other one was in a pine.

The blackburnian warbler also breeds in North Frontenac. I saw a pair in 1904, but could not locate the nest. This bird has been quite common here during the Spring migration for the past two years. Not far from this village is a tamarac swamp; in the centre of the swamp is a marly swale, quite destitute of trees. This was formerly a small marl lake of the kind not uncommon in parts of North Hastings. It is a notable place for orchids, and the pitcher plant, which is more abundant there than in any place that I know of. The showy ladies' slipper is also abundant, and here I was fortunate in finding the rams-head, and small flowering yellow orchis, (Cypripedium perniflora). On the 14th of May, I noticed several plain-looking warblers around this swamp searching for insects on the poplar trees that fringed the swamp. I thought they were Nashville, but was not sure. I visited the place again on May 25th, and to my surprise in a mossy hummock in the swamp, saw a nest of a warbler, which contained three eggs; a fourth egg lay outside. Something had molested the nest, and it was deserted. The eggs were specked and spotted with brick-red, and exactly corresponded with the eggs of the Nashville warbler. A little further on among the tamaracs, a small bird flashed from another hummock, where marsh ferns grew, but had not yet sprung up again on going to the place. I saw a nest with five eggs, evidently warblers. I watched for the old birds; first the female came and hopped about a tamarac close by; presently she was joined by her mate, and a little later a third of the same species arrived: They were plain birds without distnguishable markings and were the orange-crowned-warbler; a warbler that I believe goes further north than any of its race, but whose 'habitet' is rather West than East, although there is a record of the nest having been taken in the State of Maine. The eggs of this bird are very beautiful, white with a zone of cinnamon colored specks round the larger end. The specks are very fine and remind me of the specks noticed on the egg of the stormy petrel. Close by on some of the hummocks under the tamaracs the ram's head orchis grew. I found nine flowers. At this date (25th May) with the exception of a stray cypripedum pubesceus, no other orchis was flowering.

The black and white warbler (Mniotilla varia) is not uncommonly met with. They arrive in April; in 1905, on April 29th, and are last seen in September. The nest is not often seen. This year, 1906, I came across one in the upturned root of a pine. It contained three eggs and a cowbird's, incubation commenced. This was on May 28th. The bird was quite tame and when I noticed the nest almost fell off and fluttered over the ground.

Of the other warblers, I have seen the bay-breasted as late as September 12th, but have no knowledge that it is more than a common migrant in these counties; Dilson's Warbler is quite uncommon and breeds rarely, as I saw a nest in the side of a moss-covered hummock, June 2nd, 1905. The redsterl is fairly common in Hastings County, but abundant further East; with several others that I have not been able to positively identify at the time of the Spring migration.

There is no more interesting study in bird life than a study of the warblers, and we still have much to learn of their distribution and habits.

The Carolina Wren, an Established Resident of Ontario.

BY W. E. SAUNDERS, LONDON, ONT.

This bird, so common in the central United States, and breeding down to the southern boundary, was represented in Ontario up till 1904 by only one specimen, which was taken at Forest in February, 1891, where it had been living for a month and entertaining the residents of that town with its music. The song is rather a striking performance and while each individual rendition consists of repetitions of the same theme, yet a single bird sings different themes at different times so that its repertoire is really considerably varied, and, no doubt, Mr. Montague Smith of Forest, who identified this first specimen, enjoyed its entertainment very much.

After 1891 there was no further occurrence of this bird noted in Ontario until the winter of '04-'5 when Dr. O. J. Stevenson located one, by his song, in the Elgin Ravine in the city of St. Thomas. In April he wrote me about it and I went down to St. Thomas right away. The bird was readily found by its song which was a loud, striking whistle of beautiful character. The thirds were generally repeated four times, rapidly, and were delivered from near the top of a maple tree. He soon flew down across the ravine where he hunted among the tree roots, fallen branches and leaves for nearly half an hour when he flew high once more and gave a different song. This was usually repeated four times but occasionally only three. After singing two or three minutes he began to feed around the apple trees and shrubs in the back gardens and we left him. Dr. Stevenson said that the last song was the one most commonly rendered.

This bird lived in St. Thomas all that Spring and Summer and the observers suspected that a brood was raised but were not positive, but on the 5th of May, '05, I was there again and this time saw the pair. The male, as usually, was singing vigorously but he sang on the notes C. A. and from seven to nine times at once, the intervals between the songs being three or three and a half seconds and the song about one and half seconds. After four or five series of songs, of about five minutes to the series, he made a change in it and then sang for about three times and then lowered his song a half tone, always beginning as well as ending with his upper note. The whole series is monotonously, but energetically delivered.

I do not know of any other birds being located by observers in this neighborhood until I heard one on October 13th, on a scrubby hillside near the west boundary of London. He was singing cheerfully in the same themes exactly as the St. Thomas bird, but as it was not Spring and he was doubtless away from home, the song was neither frequently repeated nor long sustained. I am hoping that this bird may locate near London permanently and that it may be my good fortune to discover his home.

But while the inland records of this species are thus briefly disposed of, it is of course, to more southern localities that we may look for more abundant records.

About September 1, '05, A. B. Klugh on Point Pelee, and Prof. Lynds Jones on Pelee Island, found these birds, evidently at home, Mr. Klugh taking a fledgling whose home must have been nearby, and was probably within the confines of the Point itself. There is little doubt that Prof. Jones' birds were also residents on the Island.

Again, on May 24, '06, I heard and saw a Carolina singing in a swampy open woods at the base of Point Pelee, pointing strongly to the probability of a nest in the immediate neighborhood, and others have since been observed on the Point by Messrs. Taverner and Swales.

With all these occurrences before us I think we may justly surmise that this species is irregularly (?) and not commonly distributed as a breeding species, between Point Pelee and St. Thomas, and it only awaits a more thorough investigation of this territory to prove his residence in this territory.

The Gooseander in Ontario.

BY C. K. CLARKE, M.D., LL.D.

It is not every one is cognizant of the fact that in some localities in Ontario the Gooseander (Merganser Americanus) breeds rather freely, and on at least one of the Thousand Islands is to be found commonly.

I made the discovery quite accidentally, many years ago, long before collecting had become a habit, and actually had a lively flock of young gooseanders hatched out by a hen, the boy who secured the eggs taking them to be those of the Wood Duck, which I was anxious to domesticate. Gooseanders are a poor substitute for Wood Ducks, at any time and the experiment was a disastrous failure; but the haunt of the Gooseanders was revealed.

My friend, Mr. Edwin Beaupre, of Kingston, went to investigate an Eagle's nest with me and we found the tree occupied not only by the Eagle but a Merganser as well, to say nothing of an English Sparrow's untidy nest.

It was rather a coincidence finding bald-headed eagles and Mergansers breeding in the same tree, but as a gentleman remarked the Merganser being of the American variety, felt it better to be under the protection of the Eagle.

There were eighteen eggs in the Merganser's nest and no doubt two birds had contributed to the collection. We found it first occupied on April 10th, a month too early, if we believe all we read, and the nest was not lined with down as it should have been, if we accept what the authorities tell us; however, facts are stubborn things, and the facts are those just stated.

Flying Squirrels.

BY HERBERT BOND, GUELPH, ONT.

Everyone is quite familiar with our little friends, the Red Squirrels, as they are diurnal animals and easily seen scampering in the trees, but few are acquainted with my pets, the Flying Squirrels. These little animals first came to my notice about five years ago while trapping Chipmonks. On approaching one of my traps I was delighted to find its occupant was a Flying Squirrel which I still have in my collection.

The nocturnal Flying Squirrel differs from the ordinary diurnal squirrels mainly in having the fore and hind legs connected by a wide membrane. This membrane acts as a parachute, and enables them to leap great distances with ease. This membrane consists of a tough skin, extends along both sides of the body, thickly covered with hair. Its broad flat tail is very effective as a rudder though it is more flexible than that of the Red Squirrel.

The Flying Squirrel of North America is next to the smallest variety of the whole species being about the size of a Chipmonk but in reality looks larger on account of its soft delicate fur which hangs in folds loosely over its body. Its color shades from white under the belly to dark grey on the back with a strip of black outlining the webs. The eyes are very remarkable for there large size and darkness of color making the little animal very cute in appearance.

Its food is similar to that of other squirrels and being a hibernating animal, the Flying Squirrel stores large quantities of food for winter and spring use. The food is usually of a vegetable nature, consisting of nuts, acorns, wheat and other fruits and seeds. Although squirrels are not carnivorous animals they will rob birds' nests and eat the young. My squirrels are very fond of a fresh piece of meat and will eat it readily. But I have found them to relish probably more than anything else fresh buds and milk.

Flying Squirrels mate in pairs and the female produces from four to five young at a litter, which are under her care till the following spring. The mother has her nest usually in a decayed log or stump close to the ground. This nest is principally lined with the under bark of the cedar. The young are born in June and begin to leave the nest in August.

In the summer of 1905 while walking through a wood near Guelph, I observed on the top of a rotten stump, an irregular hole filled with finely divided bark. This at once drew my attention and thinking it to be an old bird's nest started to examine it. On touching the cedar bark I was bitten from below. Taking off my coat and tying the wrist end of the sleeve I placed the shoulder end over the hole and commenced to poke. The squirrel, as I knew it must be after a stubborn fight, ran into the sleeve where it was my captive.

With persistent labor in tearing away the stump I arrived at the nest and was fully repaid for my work by finding it to contain five little bare pelted squirrels with their eyes closed. Their tiny wings indicated to me that it was a nest of Flying Squirrels.

Packing the young in my hat with their nest and leaving their mother in my sleeve I hastened home. On arriving I placed the family in a large cage suitably made for the purpose of giving them freedom and comfort. After being assured she was feeding her offspring I placed the cage in a quiet room where I fed her milk and all the dainties known to squirrels, constantly petting her till she became tame and allowed her young to be handled. When they had their eyes open and were well covered with slate-colored fur I placed them out doors. It amused me greatly at times taking the little ones from under their mother and having her come from the cage into my hand and carry them, one by one, back to their nest. One night, while petting the young, the mother ran away and climbed a large tree near by. Naturally I thought she was gone for good and the young would perish for want of nourishment. The following night on going to see if the little one would drink milk from a spoon, I was amazed to find the old mother lying flat against the wire of the cage and her offspring sucking her nipples through the meshes.

In the spring of 1906, when the young were full grown I partitioned off a space in the woodshed about five by seven and fully eight feet high. In this enclosure were placed some old apple limbs with hollow centres and other branches. The squirrels mated and on the 17th one pair had a litter of five. Shortly after, on June 23rd, another pair had a litter of four. The family that was born on the earlier date opened their eyes on July 18th, and the latter litter on July 23rd. Neither families appeared out of the nest till the month after their eyes had opened, which was on August 17th for the first and August 24th for the second litter. Inside of a week after leaving the nest they started eating bread crumbs and other soft food.

Flying Squirrels seem to be of a friendly disposition toward each other as the ten which I have left all sleep together in one log, although there are four or five logs at their disposal. In spring they break up in pairs and have separate homes. The females are more docile than the males and are easily handled without fear of being bitten. They are very playful and enjoy themselves, chasing one another up and down the wire exercising on a slim limb that touches the wire by running up the wire and down the under side of the limb, jumping across again to the wire, thus forming a circle.

These squirrels have many more similar feats which they perform, but the most striking of these is the action of my old Flying Squirrel which I have had five years and have carefully watched. He is kept in a small squirrel cage that has a wheel and placed on a radiator in the house. His wheel is kept going from about eight o'clock in the evening to well on in the morning. He is the best weather barometer of the kind I have ever seen. For before a cold spell he will remove all the bedding from his house which is on top of the cage and place his nest close to the radiator. Again when a warm spell comes he moves his nest to a little box above.

The Better Protection of Fish and Game.

BY SECRETARY FISH AND GAME ASSOCIATION, GUELPH.

Throughout the Province of Ontario the feeling in favour of the better Protection of Fish and Game has taken root and is bearing fruit, as was evidenced at the first annual conference of the Ontario Fish and Game Protective Association held recently at the University Buildings at Toronto, over which Chief Justice Falconbridge presided, and which was noted for the completeness of its arrangements and the consequent success that attended the gathering. Scattered through the Province are branch Associations and each one was supplied with carefully prepared pamphlets, containing every point that had arisen in connection with the various questions brought to the front in enforcing the acts dealing with Fish and Game. Each branch was asked to send its delegates fully prepared to state the needs of their own county and the views of all the members on all the questions put forward.

On account of their commercial, financial and economic value to the county it was decided that more attention should be devoted to the protection of our fish, game and insectivorous and song birds, and that these important facts should be spread as widely as possible among the people.

The wild lands of the Province suitable to game, and the waters of the Province suitable for game fish should be ever kept the property of the public, that the Association must always endeavour to prevent the acquisition by individuals or groups of individuals, of large tracts of territory for the purposes of forming game preserves; and that the Association should have no connection with a political party.

The Guelph branch of this Association has now a large membership and is doing good work within the county which was evidenced by two recent prosecutions of violation of the game laws and in both cases convictions were secured.

Among many other valuable reforms which were advocated were the following :—

The altering of the open season for spreckled trout from May 1st to August 5th, instead of a month later as at present.

The placing of the opening of the duck season at Sept. 15th, so as to come at the same time as the partridge season so that this would do away with the pretext of going out to shoot ducks before the 15th, and shooting patridge.

The placing of the license fee for hunting big game in Ontario at $50.00.

A law that hounds shall not be allowed to run at large where game is known to exist between April 1st and October 1st.

Laws to prohibit the polution of our streams by dyes and chemicals. This question was referred to the legal committee for investigation.

The next conference of the Association will be held in the Parliament Buildings, Toronto, at Easter.

Enemies of the Shepherd's Purse.

—o—

BY G. E. SANDERS, O. A. C., GUELPH.

During the early part of June, 1906, the following were observed attacking the Shepherd's Purse, *Capsella bursa-pastoris.* Taken together the amount of good done by them, in lessening the amount of seed produced by this noxious weed, was very considerable.

A Ground Beetle, *Amara impuncticollis*, was observed feeding on seeds and seed pods. The pods attacked were eaten into from the upper side, about one-half of one side of the pod being destroyed, and all or nearly all the seed eaten. On the plants attacked, it was estimated that the amount of seed destroyed varied from one-tenth on some plants to three-quarters of the total crop on others.

A Snout Beetle, *Ceuthorynchus septentrionalis*, was noticed boring into the immature pods and feeding on the seed. The beetles were fairly numerous, four or five of them being found on one plant; but the amount of injury done by them was not appreciable.

A Maggot, which was probably the Cabbage-root Maggot but which could not be identified with certainty, as attempts to breed the adult were unsuccessful, was found boring in the roots and crown and in some cases in the stem near the ground. In some plants as many as eight or ten maggots were found, their tunnelling causing the plant to break off easily at the surface of the ground. The attacked plants lacked in vigor and in many cases died before they had time to ripen their seeds.

The White Rust of the Crucifer, *Cystopus candidus*, was found in considerable quantities attacking the leaves and branches, causing them to become distorted. The rust was doing an immense amount of good by dwarfing all parts above the point of attack, thus rendering the branches attacked incapable of producing an ordinary crop of seed.

NOTES.

Falco Peregrinus Anatum.

J. W. RUSSEL.

While travelling past the base of the high cliffs near the narrows to Dorset, on the Lake of Bays, in June of last year, the shrill cry of a pair of peregrine falcons warned me that their nest was near. On looking up the face of the cliff, three fluffy white young falcons were seen on a rock ledge about 150 feet above water, but still fifty feet below the top of the cliff. It was impossible to reach the ledge except by means of a rope from above. The ledge was about three feet wide, and the nest, if such it may be called, was just under the edge of a low bush. The nest consisted of just enough stones to keep the eggs and the young birds from rolling off down the precipice. Food remains showed that the young had been fed on rabbits, grouse, and blue jays—especially the latter—the ledge being literally covered with their feathers. Two of the young birds were secured. By the beginning of July they were fledged, and by the middle of July could fly. They were easily fed, and ate on an average the equivalent of a crow, a day.

This year the old falcons nested in the same place, and the young birds were hatched about May 20th.

See frontispiece.

——o——

"What is the Value of Color to the Fleshy Fungi?"

J. DEARNESS, M.A.

Multitudes of small larvae appear to be dependent on these plants for their food. It is easy to see that color might guide the parent insect to the plant. But if the larvae consumes the spores as well as the tissue, how do they subserve the interests of the host? If they eat the flesh, as some of them do, and neglect the hymenium, what gain can come to the plant? In this locality the palustrine *Hyphomycetes* are particularly bright colored and yet freer of insects than their quieter congeners on the upland. Why should bog plants of this class wear such bright reds and yellows?

—o—

An Orchid New to Wellington County.

J. L. BEATTIE.

On June 30th I found a small patch of orchirds, *Microstylis monophyllos*, in a tamarack swamp near Guelph.

—o—

A Nest of the Great Horned Owl.

JOHN ALLAN, JR., ALMA, ONTARIO.

On March 4th, 1906, a nest of the Great Horned Owl (*Bubo virginianus*) was found in a hemlock tree, about 30 feet from the ground. The birds had fixed up an old crow's nest and the owl had added a few of her own feathers. The nest contained two eggs, which seemed to be the full set as no more were laid.

—o—

Nest of the Myrtle Warbler.

BY E. J. GALE AND J. ALLAN, JR., ALMA, ONTARIO.

On July 9th, 1906, Mr. Ewart Gale and I were out for a stroll. We saw a female Myrtle Warbler (*Dendroica coronata*) with food in her mouth. We watched her and in a few minutes she was joined by the male also carrying food. He flew around from tree to tree for a few minutes and then flew into a balsam near by. I climbed up and found the nest about 12 feet from the ground. It was made of fine twigs and lined with grass and feathers and contained four young just ready to fly.

—o—

Rhamnus Frangula, Near Guelph.

T. J. MOORE, GUELPH, ONTARIO.

In September, 1906, while botanizing in a willow swale just west of the city, I found a specimen of Rhamnus frangula, L. It was about five feet in height and in flower. On October 1st I secured good flowering specimens from it.

—o—

Nest of the White-Throated Sparrow, near Woodstock.

R. C. DEDHAM, BRUSSELS, ONTARIO.

As R. F. Clarke of Woodstock and I were searching a large swamp about four miles south of that city, on May 24th, 1905, we suddenly flushed a White-throated Sparrow which flew into a small cedar, just above, and began to chirp excitedly. After satisfying ourselves of its identity, we began to look for its nest, which we could tell by its actions we were near. We soon found it nearly sunk in the ground under a small stick. It was composed of moss, dry grass, rootlets, etc. It was entirely covered, the entrance being at the side, and contained four eggs.

—o—

Accipiter Atricapillus.

J. W. RUSSEL.

Among the pines of the Temagami Reservation the nest of the Goshawk was found about the middle of July. The young hawks were almost ready to fly. On attempting to climb the pine tree to take the young alive, the mother hawk became much alarmed and on one of her swoops struck the head of the climber and carried off triumphantly his felt hat. It was found a few days later at a distance of about a mile, and pierced in a number of places by her talons. On approaching the nest, the young flew to the next tree. They had been feasted with grouse and rabbits, as far as remains indicated. The nest was at the height of about forty feet, was about three feet wide, and built out of coarse twigs and small sticks, rather loosely built together.

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Land-Locked Trout of Gillies' Lake.

S. B. M'CREADY, GUELPH.

Gillies' Lake, on the eastern side of Bruce Peninsula, is one of remarkable formation. It lies about a quarter of a mile inland and over two hundred feet above the level of the water of Georgian Bay. Its natural drainage is towards Lake Huron, several miles to the west, although it has no apparent affluent· A sluice has been cut for driving logs to the mill, the powers for which it also furnishes, on the near shore. The lake seems to be on about the highest ground in that part of Bruce Peninsula.

Local tradition has it that there is an underground river, the rushing waters of which may sometimes be heard under the rock, draining it into Georgian Bay; and further that its level is sustained by connection with the higher land of Manitoulin Islands. The area of the lake is probably six miles and its waters very deep and cold.

A land-locked variety of our Lake Trout is caught in the lake. They are generally spoken of as Mountain Trout, but by some are called Grayling. They are evidently a form of Cristivomer namaycush (Walbaum) but do not appear to attain to the size of the fish in the open lakes. On the evening of July 5th, 1904, we took a two and a half pounder, trolling, after having unsuccessfully trolled all afternoon. Early next morning we secured thirty-one. In size they ran from about one to three pounds, and in colour varied from specimens that were almost entirely silver-white to those that were a marbled black on the back and white only on the belly.

——o——

A Mammal New to Wellington County.

BY ALEX. GOLDIE.

The Hairy-tailed Mole, *Parascalops breweri*, was taken in a woods at Guelph on March 12th, 1907. The mole was caught in a mouse-trap baited with biscuit.

——o——

Hairy-Tailed Mole.

T. J. MOORE, GUELPH, ONTARIO.

In a woods near Acton on December 28th, 1906, I captured a Hairy-tailed Mole, *Parascalops breweri*, Bachman. This species is very rare in this district, but the Star-nosed Mole, *Condylura cristata*, L., is fairly common here.

The Inflorescence of the Canada Thistle.

(*Cnicus arvensis*).

H. GROH.

Since so many field naturalists overlook the real nature of the flowers of Canada thistle, it will not be amiss to call attention to a peculiarity of some interest which they possess. That the flowers are imperfect is quite evident from the occurrence of distinct patches of the plants, those in one area bearing flowers which are followed by heads of conspicuous downy pappus, and those in an another producing flowers which simply dry off after a time without showing any pappus plumes. Such patches may be intermixed or merged together to some extent, but only when they are composed of plants which have arisen from rootstalk extensions of representatives of each type of plant growing in proximity to one another; and it can be seen by anyone that as a rule they are fairly clearly isolated. An examination of the heads after the stage of flowering is past shows that only the patches bearing plumes have developed seed. Careless observation of only the other heads might lead one to mistaken conclusions, and this is evidently what gave rise to the dispute which used to be waged in one neighborhood regarding whether the thistle produced any seeds.

Most botanical treatises are content with saying that the thistle is dioecious; and this is doubtless accurate enough for all practical purposes. Closer examination, however, reveals the interesting fact that while the flowers are functionally pistillate and staminate, they are after all only imperfectly dioecious. Flowers of each type will be found to have both pistils and stamens represented. In the one, however, the pistil lacks a stigma, and in the other the stamens are abortive, lacking anthers.

The difference between the flowers also causes a slightly different appearance of the heads. Those which do not develop seeds are slightly shorter and stouter, owing to the contained corollas being shorter and their lobes longer.

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Wellington Field Naturalists' Club.

The Wellington Field Naturalists' Club was founded at Guelph, Ontario, in March, 1900. Its object is to encourage biological research in Ontario. During the past seven years a great deal of work along these lines has been done, some of which forms the present bulletin, and more of which will appear in future numbers. Official meetings are held every two weeks, from the middle of October to the middle of April, and after that date informal meetings are held. At the official meetings current observations are reported, papers read and business transacted. At the informal meetings current observations are discussed. One open meeting, to which the public are invited, is held during the winter. Some of the subjects discussed during the past winter were :—

Protective Coloration in Animal Life.
Habits of Flying Squirrels.
The Grosbeaks at Guelph.
Symbiosis in Plants.
Parasitism in Animal Life.
Ambrosia Beetles.
Habits of Spiders.
Mosquitoes.
The Porcupine in Northern Ontario.
Fish of the Speed River at Guelph.
The Frogs of Wellington County.
The Moles of Wellington County.
The Garter Snake.

OFFICERS.

Hon. President, J. Dearness, London, Ontario.
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Secretary-Treasurer, T. J. Moore, Guelph, Ontario.

Publications Received.

The Distribution and Migration of North American Ducks, Geese and Swans. By Wells W. Cook. Bulletin No. 26, Biological Survey, Washington.

In this timely bulletin Prof. Cook has gathered together the facts concerning the breeding ranges, winter ranges and migration routes of North American Waterfowl, which should form the foundation of all laws passed for the protection of these valuable birds.

A. B. K.

The North American Eagles and their Economic Relations. By Harry C. Oberholser. Bulletin No. 27, Biological Survey, Washington.

After a careful consideration of the food habits of the Bald Eagle and Golden Eagle the writer concludes that the former does more good by the destruction of noxious mammals and the consuming of carrion than it does by devouring game and occasionally domestic animals, while the latter is injurious on account of its persistent hunting of grouse, ptarmigan, etc., and its depredations upon the barn yard.

A. B. K.

Rhodora. Journal of the New England Botanical Club. Vol. VIII., Nos. 87-95.

This admirable magazine has within the last year published many articles of the highest importance to Ontario Botanists. In No. 87 President E. Brainerd continues his interesting notes on "Hybridism in the Genus Viola." In No. 38 Dr. Fernald describes a new Streptopus (*S. longipes*) which is of interest to the W. F. N. Club on account of the fact that the type specimen was collected by the President of the Club, Mr. Bronson Barlow, while in Michigan. In the same number Dr. Fernald shows that the sedge which has passed as *C. magellanica* should be known as *C. paupercula* and names two varieties of the species, *C. p. irrigue* and *C. p. pallens*.

In No. 89, Mr Ora W. Knight gives the results of his experiments with two yellow *Cypripediums* which show that the so-called *C. pubescens*, on being transplanted, often gradually assumes the characters of *C. parviflorum* and vice-versa, and also states that plants showing characters of both so-called species are found wild, and concludes that the plant which has been known as *C. pubescens* is only a form of *C. parviflorum* and should be known as *C. parviflorum pubescens*.

In No. 91 Dr. Fernald describes a new variety of *Cyperus filiculmis* (*C. f. macilentus*) and cites Point Colbourne, Ontario, as one of the many stations. In No. 92 Professor F. Lamsom Scribner writes an important article in which he establishes the genus *Sphenopholus*.

Our grass *Eatonia obtusata* becomes *S. obtusata lobata* and *Eatonia pennsylvanica* becomes *S. nitida*. In the same number Dr. M. S. Fernald, in "Some New or Little Known Cyperaceae" describes a new variety of *Scirpus cyperinus*, *S. c. pelius*, and gives as one of the original stations Windsor, Ont., and in a continuation of this article in No. 93, Dr. Fernald describes *Carex virescens swanii*, a sedge which ranges into Southern Ontario, transfers the variety *copulata* of *Carex digitalis* to *C. laxiculmis*, citing Port Stanley, Port Dover and Leamington, Ont., as stations, and describes a new variety of *Carex* *laxiflora* (*C. l. leptonervia*) and cites Niagara, Ont., as a station.

In No. 94 Dr. B. L. Robinson shows that the Vienna rules require that the name *Lindera benzoin* be changed to *Benzoin aestivale* and *Sassafras officinale* to *Sassafras varifolium.* In No. 95 Mr. A. S. Hitchcock in " Notes on Grasses " describes a new variety of *Panicum lanuginosim*, (*P. l. siccanum*), citing a plant collected at Galt, Ont., by Mr Herriot.

A. B. K.

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The Plant World Volume IX, Nos 2-10.

This magazine has in these numbers published many valuable botanical articles. In Number 2 Dr. K. M. Wiegand writes on " The Occurrence of Ice in Plant Tissues." In Number 3 Mr. Wm. A. Canon gives an interesting glimpse of an Arizona Desert and Professor F. E. Lloyd gives notes on "Artificial Induction of Leaf Formation in the Ocotillo." Number 4 is, whether by of chance or design, an Orchid number—Professor R. G. Leavitt writing on the blooming of an Unusual Orchid and Miss G. G. Miles on " Our Mocassin Flowers and Other Orchids at Home." There is an extract on "The Perils of Orchid Hunting," and other extracts, under "Notes on Current Literature," deal with Orchids. In Number 5 Doctor Wiegand gives some interesting notes on " The Passage of Water from the Plant Cell During Freezing." In Number 7 Professor F. E. Lloyd describes the three species of *Parkinsonia* known as "Palo verde," in Arizona. In Number 10 Professor J. C. Arthur writes a most interesting article on " The Paired Peeds of Pocklebur."

A. B. K.

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The Journal of the Maine Ornithological Society, Volume VIII., Numbers 2–4.

This journal well reflects the activitty of the club it represents. The past year has been a great strengthening of its "Notes" department. Number 2 contains a most excellent photo of a White Winged Scoter. The life histories of Maine Warblers are continued. Professor O. W. Knight dealing with the black-throated Blue Warbler in Number 2 and Mr. J. Merton Swain with the Pine Warbler in Number 4. Two articles on ducks—"Why Wounded Ducks Disappear," by Mr. F. J. Noble, and "White Winged Jerry, the Scoter," by Mr. Walter H. Rich, in Number 3 are of great interest.

A. B. K.

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The Fern Bulletin, Volume XIV, Numbers 1–4.

In this volume this quarterly, which has the distinction of being the only magazine devoted exclusively to ferns, has published much valuable information. The series of Fern Floras has been continued, that of Connecticut appearing in Number 1; of Ontario in Number 3; and of Maine in Number 4. In Number 1, Mr George E. Davenport writes on the relationship on *Botrychium matricariaefolium*. In Nos. 2, 3 and 4 the Editor, Mr. W. N. Clute, continues his "Check List of North American Fernworts" which is in Number 4 brought up to the Genus *Gymnogramma*.

A. B. K.

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The Wilson Bulletin, Numbers 54 and 57.

This excellent quarterly has published many interesting and valuable articles during the last year. In Number 54 Mr. P. A. Tavener in an article on "The Yellow Breasted Chat in Michigan" incidentally gives some new Ontario records for this species. In Number 55 the Editor, Professor Jones, writes an important article on the life-history of the Common and Roseate Terns, and Messrs. Swales and Taverner gives notes on Lake Muskoka birds.

A. B. K.

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Bird Lore. Volume VIII, Numbers 2–6.

In this volume the most excellent series of colored plates of North American Warblers which have been appearing in Bird Lore for three years are concluded. These plates are by far the finest colored illustrations of birds we have seen and we are glad to note that during next year the Thrushes will be figured in a similar manner.

A great number of highly interesting articles on the habits of birds have appeared during the past year in this magazine, some of the best being "Some Bird Notes from the Magdalens" by H. K. Job ; "With the Whip-poor-wills, and "A Kingbird Family" by A. D. Whedon ; "A Familiar Sparrow-Hawk" by N. C. Brown ; "The Yellow Breasted Chat," a very clever character sketch by P. A. Taverner ; "The Home Life of the Red Tailed Hawk" by R. W. Hegner ; "Nestling of the Arctic Three-Toed Woodpecker," by Laurence Archilles, and "The Rose-Breasted Grosbeak," by F. L. Holtz. The numerous illustrations from photographs of birds in their haunts in each number are excellent.

A. B. K.

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The Ottawa Naturalist. Vol. XX., Nos. 1–9.

The American Botanist. Vol. X., Nos. 3–6 ; Vol. II., Nos. 1–3.

Observations on the Occurrences of Bootts Fern. By Philip Dowell. (Reprint from Torreya. Vol. VI., Number 10.)

Birds of Toronto, Ontario, Part I. Water Birds. By James H. Fleming. (Reprint from "The Auk." Volume XXIII, No.4)

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"The Queen's University Naturalists' Club."

BY JOHN A. ANDERSON.

This Club was organized at Queen's University, Kingston, on December 4th, 1906.

The object of the Club is to bring those interested in Natural History in the University into closer touch with one another and to do what it can to advance the study of Natural Science generally.

The following officers were elected :—

Hon. President—Dr. W. L. Goodwin.
President—A. B. Klugh.
Secretary—John A. Anderson.
Executive Committee—F. L. Sine, E. A. Birkett, D.A. Nichols, together with the President and Secretary.

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